

REMARKS

Claims 1-31 and 33-66 are pending in the application. With this response, claims 1, 47, and 52 are amended. Claim 55 is canceled, with the subject matter of claim 55 being incorporated into claim 52 by amendment. No claims are added. Claims 1-31 and 33-51, and 53-66 remain pending in the application for consideration.

The amendments to claims 1, 47, and 52, are appropriate for entry at this time, even though they come after a final rejection. The amendments are appropriate for entry, after final, because the amendments are believed to overcome grounds for rejection of certain claims in view of prior art references asserted against those claims, by clarifying language in the claims. Thus, entry of the amendments would reduce the number of issues on appeal, should an appeal be necessary. Additionally, the amendments do not add new matter and do not result in a need for additional searching. Thus, it is respectfully requested that entry of the amendments be allowed.

The three-month shortened statutory period for response is set to expire on August 27, 2004. It is respectfully submitted that this response, August 26, 2004, is timely within two months from the mailing date of the final rejection, May 27, 2004.

It is believed that no additional fee is required at this time. However, if a fee is required, please charge Deposit Account No. 50-1775 and notify the undersigned of the same.

Reconsideration and allowance of the claims in light of the following remarks, are respectfully requested.

Claim Rejections - 35 USC § 112

Claims 1-24, 57, and 58 are rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

According to the Office action, the claim feature "release liner" is not supported by the specification, because only silicone release liners are described.

The rejection is traversed, because in addition to silicone release liners, other forms of release liners are also described.

For instance, the application at page 18 describes polymeric substrates that include polyester which is a form of a release liner. Examples 1, 2, and 3 of the application, for example, use polyester as a substrate upon which a coating material (cathode material) is coated according to the invention. The polyester of those examples can act as a release liner for the coating material, in that the coating material may be removed (can release) from the surface of the polyester substrate.

Thus, overall, the specification as filed describes various embodiments of release liners as substrates. These include silicone release liners, in addition to other types of release liners, including polyester materials that perform as release liners when coated with a cathode material according to the invention. As such, the assertion in the Office action that only “silicone release liners” are described, is incorrect. The language of claim 1 reciting a “release liner,” is fully supported by the specification as filed. The rejection of claim 1 as containing new matter should be withdrawn.

Rejection Under 35 U.S.C. 102

Carlson

Claims 1, 5, 7-9, 16-24, 47-54, 57, and 58 stand rejected under 35 U.S.C. 102(e), in view of Carlson (US 6,488,721).

Claims 1, 5, 7-9, 16-24, 57, and 58

The rejection claims 1, 5, 7-9, and 16-24 is overcome by amendment to claim 1.

Claim 1 has been amended to clarify that the edge and cathode materials coated “onto the substrate,” are coated onto the substrate such that the coating materials “contact the substrate.” This is distinct from being coated to contact a microporous material that has previously been coated onto the substrate, e.g., as described by Carlson.

The amendment to claim 1 is supported throughout the specification as originally filed, e.g., at figures 2a and 2b, and in the examples.

Claims 47 through 51

The rejection of claims 47 through 51 is overcome by amendment to claim 47.

Claim 47 has been amended to clarify that the edge and cathode materials coated “onto the substrate,” are coated onto the substrate such that the coating materials “contact the substrate.” This is distinct from the description of the Carlson reference

The amendment to claim 47 is supported throughout the specification as originally filed, e.g., at figures 2a and 2b, and in the examples.

Claims 52 through 54

The rejection of claim 52 as being anticipated by the Carlson reference is overcome by amendment.

Amended claim incorporates features of original claim 55, which is not rejected under section 102 in view of Carlson. Amended claim 52, therefore, is believed to distinguish over Carlson and the rejection of claims 52 through 54, under section 102, can be withdrawn.

Claim Rejections - 35 USC § 103

Song et al. in view of Carlson

Claims 52-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (U.S. Patent 6,521,382) in view of Carlson.

The rejection is traversed, or in the alternative is overcome by amendment to claim 52.

Claim 52 has been amended to incorporate features of original claim 55, including: a stack, in order, of the certain specific layers, and to additionally recite that the first and second separator layers comprise solid polymer electrolyte.

According to the rejection, the Song et al. reference describes a stack of components including an anode, electrolyte, cathode, current collector, second cathode, and second separator. Further according to the rejection, the Song et al. reference is combined with the Carlson reference, in an effort to show a battery that includes the stack of Song et al., modified to include an “edge material” at the edge of a cathode.

The Song et al. reference cannot be combined with isolated elements from the Carlson reference (e.g., the use of an edge material), to result in the subject matter of amended claim 52.

Carlson, e.g., at figures 10 and 11, describes battery structures that are different from those of claim 52, and that are also different from those of the Song et al. reference. For instance, at figures 10 and 11, the Carlson reference describes an assembly that includes a microporous separator layer 102, a single cathode layer 201, cathode current collector layers 401 and 402, electrode insulating layer 501, anode current collector 601, and active anode layer 701. These structures of figures 10 and 11 differ from the structure of the Song et al. reference, e.g., in that the Carlson structure includes a microporous separator layer and an electrode insulator layer (501), which are not shown by Song et al. Further, the Carlson structures (at least that of figures 10 and 11) differ from that of amended claim 52, e.g., in that the Carlson structure includes a microporous separator layer and an electrode insulator layer, and not two separator layers that each comprise a solid polymer electrolyte, as are recited in claim 52.

Because of the differences between structures of the Carlson reference and structures of either the Song et al. reference or amended claim 52, the combination of the Carlson reference and the Song et al. reference cannot be said to teach or suggest the subject matter of amended claim 52. Any such rejection would have to ignore specific features of the Carlson structure, such as the inclusion of an insulating layer (501). Of course no rejection may be based on a reconstruction of prior art references, such as a rejection that would pick and choose elements of different prior art references, without considering the teachings of the cited references as a whole.

Due to the differences between the Carlson structures and the structures of Song et al., and amended claim 52, Applicants' respectfully request that the rejection of claims 52 through 54, and 56, be withdrawn.

Carlson in view of Liu et al.

Claims 2-4, 10-15, 25-31, 33-46, and 60-66, are rejected as being unpatentable over Carlson in view of Liu et al.

Claims 2-4 and 10-15

The rejection of claims 2-4 and 10-15 is overcome by amendment to claim 1 upon which these claims depend.

Claim 1 has been amended to clarify that the edge and cathode materials, being coated “onto the substrate,” are coated directly onto the substrate such that the coating materials contact the substrate. The structure of claim 1 is neither taught nor suggested by the Carlson reference. Thus, the combination of the Carlson reference in combination with Liu et al., fails to teach or suggest the subject matter of claim 1, and the rejection of claims 2-4 and 10-15, which depend from claim 1, can be withdrawn.

Claims 25-31, 33-46, and 60-66

The rejection of claims 25-31, 33-46, and 60-66 is traversed, or in the alternative is overcome by amendment.

The rejection asserts that it would have been obvious to use the method of Liu et al., to produce the battery structure of Carlson. In general, the Office action asserts that one of skill would have been motivated to use the methods of Liu et al., and would have had reasonable expectation of success, based on the details of the Liu et al. and Carlson disclosures. For example, the Office action asserts that it would have been within the level of skill in the art to, e.g., “match the viscosities of the cathode and edge material when coating the two layers” and, further, Carlson is said to teach that the liquid coating mixture may have any desired solids content acceptable in the coating application method.

Still, Applicants disagree that the skilled artisan, at the time of the Carlson disclosure, would have been motivated to use the methods of Liu et al., e.g., producing nearly simultaneous coating of cathode and edge material (e.g., as recited in claim 25) or using a slotted die coater (e.g., as recited in claims 36 and 39). A closer look at the Carlson disclosure, to consider the level of skill at the time, is useful.

The Carlson reference does not specifically describe simultaneous or nearly simultaneous coating of an edge and cathode material, or the use of a slotted die coater.

Instead, the author, Carlson, seemingly of at least ordinary skill in preparing structures as described in his patent application, describes only step-wise methods of first coating either one or the other of the cathode or edge material, and then coating the other. For example, at the paragraph connecting columns 5 and 6:

In one embodiment, the step of coating the edge insulating layer occurs subsequent to the steps of coating the microporous separator and cathode active layers. . . . In one embodiment the step of coating the edge insulating layer occurs subsequent to the step of coating the microporous separator layer and prior to the steps of coating the cathode active layer and removing the temporary carrier substrate.

This language of the Carlson reference is consistent with step-wise methods of applying one layer of the structure, drying the layer, and then applying a next layer. See, also the Carlson examples, which dry the separate layers of materials before applying a next later, and fail to suggest, e.g., simultaneous coating methods.

Considering the nature of cathode and edge coating materials as claimed, and their performance requirements, it is understandable that Carlson does not describe or exemplify simultaneous or nearly simultaneous coating methods. Specifically, Carlson, in preparing his described structure having edge and cathode materials, would have been motivated to maintain a useful boundary between the materials of the edge and cathode materials, to prevent loss of performance due to the materials mixing at a boundary. By not suggesting simultaneous or slot-die coating methods, the reference indicates, at least implicitly, that it was not understood that such methods could be useful in preparing a functional structure.

The Liu et al. reference is still believed to not cure the shortcomings of the Carlson reference. Specifically, the Liu et al. reference does not add to the information available to Carlson, at the time of the Carlson reference, with respect to preparing structures that include cathode and edge materials as claimed. As described previously on the record, the Liu et al. reference only describes coating of certain PVA and glycerol solutions, which do not necessarily have the same properties as cathode materials or edge materials as claimed, and would not have the same loss of functionality should the different materials not be coated with a desired boundary. As such, the Liu et al.

reference fails to specifically teach or suggest that cathode and edge materials, as claimed, could be coated using nearly simultaneous or slotted die coating methods. It is therefore requested that the rejection of claims 25-31, 33-46, and 60-66, be withdrawn.

Allowable Subject Matter

Applicants acknowledge with appreciation the Examiner's indication that claim 59 is allowed and that claim 6 is allowable if rewritten in independent form.

Conclusion

Reconsideration and allowance of the claims, in view of the above amendments and remarks, are respectfully requested.

The Examiner is invited to contact the undersigned, at the Examiner's convenience, should the Examiner have any questions regarding this communication or the present patent application.

Respectfully Submitted,

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